

ABSTRACT OF THE DISCLOSURE

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There are provided a protective membrane-equipped composite electrolyte which is excellent in water resistance, heat resistance, and liquid electrolyte-holding ability and which is preferred as an electrolyte for a fuel cell, a method for producing the same, and a fuel cell provided with the same. A composite electrolyte is prepared by impregnating a matrix with a liquid electrolyte. A crosslinkable polymer is deposited onto a surface of the composite electrolyte together with a crosslinking agent. Subsequently, a protective membrane composed of crosslinked product is formed by reacting the polymer and the crosslinking agent with each other. Accordingly, a protective membrane-equipped composite electrolyte is obtained, in which the surface of the composite electrolyte is coated with the protective membrane composed of crosslinked product. Alternatively, when the matrix is composed of a polymer, the matrix itself may be crosslinked. An electrolyte-electrode joined unit is prepared by installing the protective membrane-equipped composite electrolyte between an anode electrode and a cathode electrode. Further, separators, collecting electrodes, and end plates are arranged in this order at the outside of the anode electrode and the cathode electrode respectively to connect the end plates to one another. Thus, a cell unit of a fuel cell is constructed.